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Where our food plants came from

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It is an obvious fact that all cultivated plants and all domesticated animals were derived from wild ancestors. The average individual scarcely realizes that agriculture is a very ancient art, and that every basic plant now cultivated for food, and most of those of minor importance as well, were already in cultivation somewhere in the world at the dawn of recorded history. The same statement applies equally well to our domesticated animals for they likewise are very ancient in domestication. The plants and animals domesticated by more or less primitive man, whether in America, or Europe, Asia or Africa were, until comparatively modern times, limited in distribution to either the eastern or the western hemispheres as the case may be. It was not until after the discovery of America in 1492 and the voyage of Magellan around the world in 1520 that the interchange of economic plants and animals between the two hemispheres commenced; until that time the cultivated plants originated in North and South America were confined to these two continents, and the same statement holds true for the larger number originated in Eurasia. While primitive man reached practically all parts of the world where conditions were favorable to his continued existence, he did not, as he advanced in culture, transmit his cultivated plants and domesticated animals beyond the limits of the one hemisphere or the other with very minor exceptions. In other words the Pacific and Atlantic formed a barrier to trans-oceanic communications between America and Eurasia until the close of the fifteenth century.

The cultivated food plants and domesticated animals form the very basis of agriculture and agriculture is basic to civilization. While modern man has greatly improved his cultivated plants, increased their yields, and extended their ranges, he has not added a single important one to the long list of species

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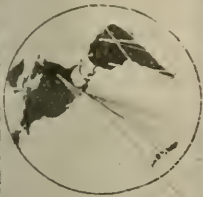
selected and domesticated by our remote ancestors. Agriculture is so ancient that for certain species, notably maize in America, the wild-growing form from which it was derived is not known with certainty.

We seldom give a thought as to whence our basic food plants came, when, where and by whom they were first cultivated, and how, when and by whom they were disseminated. If we think of corn, we are apt to think of Iowa, or some other producing region; if wheat, then Dakota or Minnesota; if oranges, grapefruit, or lemons, then California or Florida whence our market supplies chiefly come; if potatoes, then Maine or Idaho, or some other region producing outstandingly good varieties; if apples, then Maine, or New York or Michigan or Oregon, or almost any other producing region in the United States. We are influenced by our current knowledge of the chief producing areas as far as our own markets are concerned. But where did these plants originate?

If we examine the origins of cultivated plants we soon learn that the great majority of the several hundred cultivated species came originally from certain very restricted parts of the world. Much of Europe, a large part of Asia, most of Africa, all of North America north of Mexico, and all of Australia contributed little or nothing of importance, although all of these regions support a varied native vegetation. Most of the cultivated species are natives of definitely limited areas, some in America, some in the Old World, and the most important food plants originally occurred as native species in or near those regions that developed the earlier civilizations, whether in Eurasia or in America. As outstanding centers of both the origins of cultivated plants, of domesticated animals, and of early high civilizations we may mention the high lands of Mexico and of Bolivia and Peru in America, certain parts of the Mediterranean basin in Europe, Asia Minor, central Asia, and certain parts of India and China in Asia. It is from these restricted areas that most of our important food plants and domesticated animals came, and it is these same relatively limited regions that produced the several ancient civilizations. In Mexico the basic foods were maize or Indian corn, the sweet potato, beans, squashes, pumpkins, and others of lesser importance, in Bolivia and Peru the potato, lima beans, some forms of common beans,

**FOOD PLANTS
OF
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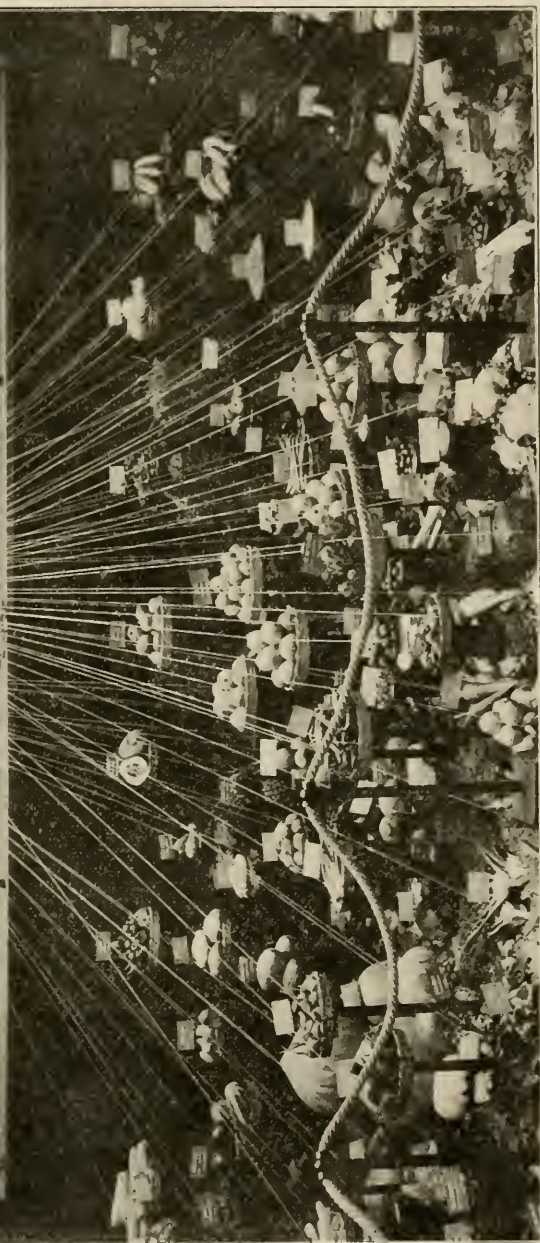
THE FOOD PLANTS ON WHICH THE EARLY AMERICAN CIVILIZATIONS WERE BASED NONE OF THEM WAS KNOWN IN EUROPE OR ASIA UNTIL AFTER 492



THE NEW YORK BOTANICAL GARDEN

FOOD PLANTS OF EUROPEAN AND ASIATIC ORIGIN

THE FOOD PLANTS ON WHICH THE EARLY EUROPEAN AND ASIATIC CIVILIZATIONS WERE BASED NONE OF THEM WAS KNOWN IN AMERICA UNTIL AFTER 1492



The New York Botanical Garden's exhibit at the Fall Show of the Horticultural Society of New York, 1934, suggests local school exhibits based on market material. This exhibit was repeated in March, 1935, at the Philadelphia Flower Show.

and numerous other food plants of lesser importance. In the various centers of Eurasia the most important primitive foods were the true cereals, such as wheat, barley, rye, oats, millet, rice and others of minor importance, buckwheat, and most of our temperate zone vegetables and fruits.

Agriculture in America developed along exactly the same lines as in Europe and Asia, except that in America domesticated animals were very few—the llama, alpaca, turkey and the Muscovy duck—and again the plants selected from among the native species that yielded edible seeds, fruits or tubers, were totally different from those of Europe and Asia. Here, as in various parts of the Old World, we find dry land agriculture, terrace agriculture, and extensive irrigation systems. To contrast the differences in cultivated plants and in plant products between America and Eurasia there is listed below two series: First those plants developed as cultivated ones from native American species, none of which was known in Europe or Asia until after the close of the fifteenth century; and second a longer list of those characteristic of Europe and Asia, none of which was known in America until after the arrival of the European explorers and colonists.

In contrast to the numerous cereals developed in the Old World from native wild grasses, America produced but one, but this the most important maize or Indian corn. Other food plants include the potato, sweet potato, tapioca or cassava, arrow root, lima bean, all varieties of garden and field beans, the scarlet runner bean, tepari bean, yam bean, tomato, pepper, Jerusalem artichoke, sunflower, squash, pumpkin, fig-leaved pumpkin, musky pumpkin, peanut, chayote, papaya, quinoa, avocado, pineapple, custard apple, soursop, cherimoya, guava, cacao or chocolate, cashew, sapote, white sapote, sapodilla, mammei, Mexican plum, and various others of lesser importance. In ancient Peru alone over seventy different species were actually in cultivation, all derived from native species, before the advent of the Europeans, and probably at least as many were also in cultivation in Mexico. To mention only corn, potato, sweet potato, pepper, the beans, tomato, squash, pumpkin and cacao, one quickly realizes Americas' great contribution to the cultivated plants of the world, and how important these items now are to the every day life of most peoples in all parts of the world.

Eurasia, particularly Asia, as contrasted to America, yielded a much larger number of cultivated food plants than did America, as well as most of our domesticated animals such as cattle, horses, camels, water buffalo, yak, sheep, goats, swine, hens, pigeons, and most kinds of ducks. Other than maize, all of the cultivated cereals originated in the Old World, including wheat, barley, rye, oats, millet, Italian millet, pearl millet, sorghum, rice, teff, ragi and coix. Other cultivated species include buckwheat, turnip, cabbage, rutabaga, rape, chard, mustard, Brussels sprouts, radish, beet, parsnip, carrot, onion, garlic, leek, shallot, spinach, egg-plant, lettuce, endive, chicory, salsify, celery, asparagus, globe artichoke, pea, soy-bean, cow-pea, chick-pea, pigeon-pea, lentil, broad-bean, hyacinth bean, asparagus bean, taro, yam, sugar cane, sesame, and various others. Among the fruits may be listed the apple, pear, plum, cherry, European grape, apricot, peach, prune, olive, fig, almond, jujube, melon, water melon, cucumber and in the more tropical regions the banana, coconut, orange, lemon, lime, pomelo, date, mango, mangosteen, bread fruit, jak-fruit, rambutan, litchi, longan, and others. Practically all of the cultivated hay and fodder plants so essential to the dairy industry, including all of the cultivated grasses except maize, as well as the clovers, alfalfa, and other commonly planted hay crop plants are of Eurasian origin. It is well again to emphasize the fact that not one of these were known in America until after the arrival of the Europeans, and with us they represent introductions since the beginning of the sixteenth century.

If we contrast the American and Eurasian lists it will be noted that most of the cereals, most of the temperate zone cultivated fruits, and most of the vegetables are of Eurasian origin, yet in all three categories America made notable contributions. The two lists of plants in themselves comprehensive enough, and sufficiently diversified to serve independently as the basis of an agriculture in America, and in various parts of Eurasia, on which, it was possible to build real civilizations, yet civilizations, in the two hemispheres, that were utterly independent of each other. The available data on the origin and dissemination of cultivated plants may be interpreted as supporting entirely and without exception the idea that as agriculture originated in America utterly independent of Old World contacts on the basis of strictly native American species, so the pre-

Columbian civilizations in America, based on this indigenous agriculture, were developed independently of Eurasian contacts. It was only after the end of the fifteenth century that Europe and Asia in any material way effected the development of civilization in America.

The rather large public that believes implicitly in Atlantis and the similar group that support the idea of Mu—assumed ancient continents or island groups in the Atlantic and Pacific basins through which cultures were disseminated in both hemispheres—as well as the extreme diffusionists among the anthropologists who would derive all culture from a common center, must continue to ignore the evidence supplied by the origin and distribution of cultivated plants. Had there been any considerable contacts between America and Eurasia in pre-Columbian times, man would have inevitably transmitted the basic food plant from one hemisphere to the other. There is no evidence that this interchange of cultivated plants commenced before the period of European colonial expansion in the 16th century.

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